

19. A catalytic hydrothermal process for treating a wet biomass feedstock comprising biomass, inorganic contaminants, soluble sulfate contaminants, and sub-critical liquid water, the process operated at temperatures and pressures that maintain the wet biomass feedstock in liquid phase without forming a supercritical fluid and characterized by:

adding a salt comprising a calcium cation to the feedstock;
heating under pressure the wet biomass feedstock to a pre-treatment temperature, which is at least 300° C. and sufficient for organic constituents in the feedstock to decompose, for precipitates of inorganic wastes to form, and for preheating the wet feedstock in preparation for removal of the soluble sulfate contaminants;
reacting the soluble sulfate contaminants with calcium cations from the salt to yield a sulfate-containing precipitate;
separating the precipitates of inorganic wastes and the sulfate-containing precipitates out the wet biomass feedstock to yield a liquid of the wet biomass feedstock having a decreased sulfate content; and
exposing the liquid of the wet biomass feedstock to a heterogeneous metal catalyst and gasifying at least a portion of the organic constituents after said separating.

20. The process of claim **19**, wherein the salt is substantially soluble at temperatures below the pre-treatment temperature.

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